



TRANE[®]

CCSA AIR HANDLING UNITS

**with 5CKL-DAHU and 5CKL-HAHU
by TRANE TRACER™ CONTROLS**

for easy installation, better performance & energy efficiency





FEATURES and BENEFITS



CCSA AIR HANDLING UNIT



Easy Capacity Selection:

The 19 models with flow rates from 500 m³/h to 200.000 m³/h offer our customers a wide selection range. Close capacity intervals let you select the accurate flow rate for your design while the high flow rates offer economic selection flexibility.

Maximization of the Operational Efficiency:

Units driven with frequency drives lets the end user change the operation range according to the need. CCSA units designed with a wide operational range providing a full satisfaction in case of any changes in demand.

Fits All Locations:

While Modular design of CCSA providing easy allocation, with a mounting on site option makes every unit possible to fit every location. Mounting on site option starts with manufacturing the parts and sending them to site. Ready parts and equipments are mounted at site by our team. This option lets the customer put units in mechanical rooms which are enclosed and impossible to carry from within the openings/doors.

Custom Production for Special Requirements:

Upon request from the customer non-standard designs and dimensions are also possible for their satisfaction.

Profiles:

They are made specially from aluminum for its light weight and extra corrosion resistance

Side Panels:

They are composed of film coated painted galvanized sheet metal exterior walls and galvanized interior walls (aluminum or stainless steel upon request) fully sealed in a closed structure. 70 kg/m³ rockwool is used between the walls of the panel with different thicknesses to provide heat and sound insulation. The panels are mounted tightly on to the structure with neoprene gaskets on the inside and outside to assure a leak-proof construction. The connections are made either by bolts or by special fitted joints.

Door Handles:

Non-projecting door handles lets the unit stay in the same size limit as declared while reducing the risk of getting damaged. Endurable design and ability to be locked gives the customer full confidence regarding the access.

Hidden Cables & Collective Cable Connector:

For prewired units and packaged solutions, CCSA units have a unique cabling style which protects the cables from any complications and provides a simplicity. All modules are connected with special connectors holding all internal cables all together collectively.



CCSA - High Performance & Energy Efficiency

Classification of thermal transmittance U of the casing of unit.

Class	Thermal Transmittance(U) $W \times m^{-2} \times K^{-1}$
T1	$U \leq 0,5$
T2 	$0,5 < U \leq 1,0$
T3	$1,0 < U \leq 1,4$
T4	$1,4 < U \leq 2,0$
T5	No Requirements

Classification of thermal bridging factor of the casing.

Class	Thermal Bridging Factor (k_b)
TB1	$0,75 < k_b < 1,0$
TB2 	$0,60 \leq k_b < 0,75$
TB3	$0,45 \leq k_b < 0,60$
TB4	$1,4 \leq k_b < 2,0$
TB5	No Requirements

Casing air leakage classes of unit, 400 Pa Negative Pressure and 700 Pa Positive Pressure.

Leakage Class of Casing	Maximum Air Leakage Rate ($l \times s^{-1} \times m^{-2}$)	Maximum Air Leakage Rate ($l \times s^{-1} \times m^{-2}$)	Filter Class (EN 779)
L1 	0,15	0.22	superior to F9
L2	0,44	0,63	F8 to F9
L3	1,32	1,9	G1 to F7

Casing strength classification of unit.

Class	Maximum Relative Deflection ($mm \times m^{-1}$)
D1 	4
D2	10
D3	exceeding 10

Acoustic insulation of the casing.

Octave Bands	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz
Test results	22,7 dB	24,4 dB	25,5 dB	25,3 dB	27,5 dB	30,7 dB	38,2 dB

ErP - Tightened Efficiency Requirements

ErP - Tier		ErP 2016	ErP 2018
Heat recovery system (HRS) with thermal by-pass facility		required	required
Thermal dry efficiency (EN 308) η_t [%]	Run-Around-Coils HRS	63	68
	Other HRS	67	73
Internal SFP value (reference configuration) SFP int-max [$W/(m^3/s)$]	Run-Around-Coils HRS	$1.700 + E - 300 \times q / 2 - F$	$1.600 + E - 300 \times q / 2 - F$
	Other HRS	$q < 2 \text{ m}^3/s$	$1.400 + E - F$
		$q \geq 2 \text{ m}^3/s$	$1.200 + E - 300 \times q / 2 - F$
	Other HRS	$q < 2 \text{ m}^3/s$	$1.100 + E - 300 \times q / 2 - F$
		$900 + E - F$	$800 + E - F$
Efficiency bonus E Heat recovery system [$W/(m^3/s)$]	Run-Around-Coils HRS	$(\eta_t - 63) \times 30$	$(\eta_t - 68) \times 30$
	Other HRS	$(\eta_t - 67) \times 30$	$(\eta_t - 73) \times 30$
Filter correction F [$W/(m^3/s)$]	Reference configuration	0	0
	Filter M5 is missing	160	150
	Filter F7 is missing	200	190
	Filter M5 + F7 are missing	360	340
Variable speed drive from ventilator		required	required
Filter pressure switch		-	required



○ Plate Heat Exchanger

Energy is saved by exchanging heat between fresh air and exhaust air without mixing them. Fresh air and exhaust air remain in separate systems. By transferring the energy carried by the exhaust air, fresh air temperature is increased towards the coil outlet temperature in winter. The opposite occurs in summer. The counter-flow heat exchanger is made from high quality aluminum or stainless steel. By-pass dampers and stainless steel condense trays are standard equipment for these module. Its efficiency is really important that it determines coil entering temperatures. Therefore it should be selected well according to design conditions.



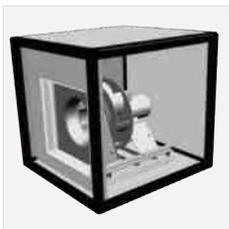
○ Rotary Heat Recovery

It can also be called as thermal wheel, where it places within supply and exhaust air flow direction. In the first half of rotation heat is transferred to thermal wheel's heat absorbing materials and it gives heat in the second rotation part to the side which has lower energy. Rotary's wheel is specially designed with containing a matrix distribution in order to increase heat transfer area and efficiency. Thermal wheel is usually made with galvanized steel or aluminum. It can be coated with epoxy for conditions where high corrosion resistance is required. There are three types of thermal wheel; Condensation Type: Usually used for sensible energy recovery. Exhaust air flow's temperature through the wheel should be cooled down below dew point for humidity transfer. Enthalpy Type: Is available for higher energy transfer due to its having hygroscopic surface. Latent energy transfer is possible, but can not comply with sorption type. Sorption Type: Higher sensible and latent energy transfer is possible due to high hygroscopic coating.



○ Heat Recovery with Two Heat Exchanger

It consists of finned tubes placed in the fresh air and exhaust air chambers together with the pump that circulates water in the tubes. Copper tubes with aluminum fins are standard for this module. Stainless steel condense trays are standard equipment for these module. Fluid flow rate is controlled by valves. In order to avoid the risk of freezing, specific amount of glycol can be mixed with water. Also frost protection thermostats can be used for this process.



○ Plug Fan Module

Is a centrifugal fan with an impeller with backward curved blades. Impeller part is directly placed on the motor shaft. Since there are no belts involved in mechanism, problems caused by it also reduced. Can cover up to 90.000m³/h and 2.000 total pressure. Sound level is lower during operating conditions since it doesn't guide air in to ducts directly. Rails holding the fan is connected to the frame with springs or rubber insulators. Fan outlet is connected to the module outlet using flexible elements.

OPTIONS for FAN MODULE:

- **Emergency Shut-Off Button** : Kill Stop - Direct Power Cut Off
- **Gland For Power Cable** : Glands for Cable Cross Sections Without Leakage
- **DPT Flow Meter** : Differential pressure transmitter processing signal and showing volume flow rate and an inlet pressure with a digital screen
- **Differential Pressure Switch** : Switch that gives and/or cuts signal when the pressure set is exceeded
- **Differential Pressure Gauge** : Gauge that shows the initial pressure difference between two set points
- **Belt & Pulley Guard** : Safety guard for rotating elements
- **Fan Guard** : Safety guard for fan rotor
- **Door Guard** : Safety guard for door failures
- **Flexible Connection** : Flexible Connection elements for AHU inlet - AHU outlet - fan outlet
- **Maintenance Switch** : Maintenance switch just to cut of Fan electricity temporarily during maintenance
- **Anti Condansate Heater for Motor**
- **Termistor**
- **Variable Frequency Driver**



○ Belt Driven Fan Module

This module contains the blower or the exhaust fan placed on supports which can slide on rails using vibration absorber. All fans are certified and their optimum operation points are specified on the computer. To prevent conduction of vibration and noise, created during operation, into the frame; Rails holding the fan is connected to the frame with springs or rubber insulators. Fan outlet is connected to the module outlet using flexible elements. The fans are driven utilizing belt and pulley systems. The pulley are mounted onto the shaft by using conical fittings. The belt tension system is simple and designed to easy access. The electric motors are 2,4, or 6 poled, 380V, 50Hz, IP 56 protection class depending on the fan. The nominal power of the motor is selected to be 20% above the shaft power (safety factor). Variable speed, direct-coupled motor-fan combinations are also available upon request. All rotary parts used in the module are dynamically balanced.



○ Heating Coil Module

Depending on the capacity and operational conditions heating coils are placed in this module. The coils which used with steam or hot water are made of copper tubes with aluminum fins. Steel tube / steel fin, stainless steel or galvanized steel finless tubes or electrical resistance heaters can be utilized optionally. The heat exchanger is designed to achieve the optimum pressure drop on both air and water sides. Usually heating coils headers are equipped with carbon steel pipes whereas steam coil headers are copper. Water inlet sides for heating coils are from down part of it whereas steam inlet is upper part of the steam coil. Supply air firstly faces with exiting water/steam in order to gain higher efficiency from heat transfer process. Air velocity on this coil can exceed 3m/s if there is no cooling coil after it. All the coils shall be selected with certified softwares and suitable to work under gaugepressure of 13 bar. Test pressure shall be 20 bar.

OPTIONS for COIL MODULE:

- **Ball Drainage Siphon** : U trap for drainage working with water gauge pressure principle avoiding the drainage water to go one-way only
- **Anti Frost Thermostat** : Thermostat which avoids any possible occasions by freezing



○ Cooling Coil Module

As air move through a cooling coil, heat transfer process begins. Heat is lost through the surface area of the coil, making the air colder. The amount of heat lost depends on the length of the coil. Are made of copper tubes with aluminum fins. The headers of cold water coils are usually made of carbon steel and for hygiene coils they are made of copper. Proper maintenance of cooling coils should be made. Frost protection thermostat should be equipped with the cooling coil where winter conditions are below 5°C. A separator is used when the face velocity of the cooling exceeds 2 m/s. Separators are designed and produced to catch the maximum amount of water. They are extruded from aluminum profiles. Supports for separator and the condense tray are made from stainless steel. All the coils shall be selected with certified softwares and suitable to work under gauge pressure of 13 bar. Test pressure shall be 20 bar.

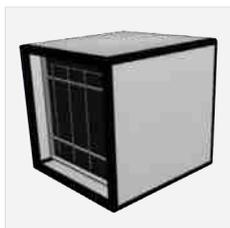


○ Electric Heater Module

Electric heaters are generally used in units which has constant flow. It has staged structure and should be provided with safety thermostat. Electric heater modules shouldn't be used for air flow rates higher than 30.000 m³/h in order to avoid high electric energy usage. During installation cabling and controlling this unit is highly important.

OPTIONS for ELECTRICAL HEATER MODULE:

- **Gland For Power Cable** : Glands for Cable Cross Sections Without Leakage
- **OverHeat Thermostat** : Thermostat which avoids any possible occasions by overheating
- **Safety Thermostat** : Emergency cut off thermostat for electrical heater to avoid any possible fires



○ High Pressured Humidifier (Fog / Spray System)

Inlet frame of this module, which holds on the nozzles, is made from stainless steel. Dimensions of it can vary upon desired design conditions. It is possible to go up to 78 l/h to 8100 l/h by using several pumps and compressors. Solenoid valves are used to enable desired capacity.

Although the general operation pressure is about 80 bar, nozzles are tested at a pressure of 150 bar. Controlling of this module can be achieved with fixed or variable electronic card. It is also possible to control humidification process with a dry contact output.

OPTIONS for HUMIDIFIER MODULE :

- **Humidifier Cabinet :** Cabinet for external humidifier units



○ Steam Humidifier Module

Steam obtained from the external steam generator is mixed with air under control to obtain the required humidity. Stainless steel condense trays are standard equipment for this module. The system can be observed through the leak proof observation window.



○ Sound Attenuator Module

Silencers are designed with respect to sound absorption levels that are placed in this module. Consists of rock wool filling material covered with glass-mat mounted onto the galvanized frame. Sound attenuation is achieved on the return, exhaust and supply sides through suitable pitch and length. Air inlet sides are specially designed to form a laminar flow distribution.



○ Supply Module With One Damper

Are used for adjusting air flow rate by increasing/decreasing total pressure. Are manufactured with aluminum frames. Are produced from special alloy aluminum profiles having an aerodynamic form to reduce drag and leakage.

They are made airtight with using neoprene gaskets and by-pass elements. Dampers are linkage type instead of rotating gear aluminum frame type upon request. Damper blades can be driven easily by servomotors or rotated manually. The blades can move parallel or against each other for both configurations. Welding is not used during the production of the dampers



○ Mixing Modules With Two Dampers

Designed to save energy by mixing the required amount of fresh air and return air. The economic comfort conditions are reached using a smaller heat exchanger by decreasing the air temperature difference between the heat exchanger inlet and outlet. Consists of exhaust, fresh air and return air dampers functioning together to regulate the mixture.

Dampers can be placed on any side, on the outside or on the inside to save place. Control system of this mechanism is vital due to arrangement of fresh air/internal air percentage.



○ Mixing Modules With Three Dampers

Are also designed to save energy like modules with two dampers. Only difference is that, two fans are used when there is mixing module with three dampers. One is for exhaust and one is for fresh air. Third damper, which is at the connection point between two modules, is the mixing area. Third damper's air velocity can exceed a bit more than supply dampers air velocity at the surface. It should also be noted to select supply module's damper as %100 fresh air criteria during designing process.

OPTIONS for DAMPER MODULE :

- **Flexible Connection** : Flexible Connection elements for AHU inlet - AHU outlet - fan outlet
- **Roof Curb** : Waterproof solutions for dampers on external units
- **Electrical Damper Heater** : Anti Frost Solution For extreme low temperature conditions. Damper with electrical heater Below 0 degrees Celcius, damper blades face frosting issue which causes failure in case of damper is closed/blades contact. In order to avoid this problem damper blades should be heated. Heating the air entering the damper face is not sufficient it self due to lack of face area/lots of energy need. Heating up the blades will avoid the frosting by fusion so the energy needed is reasonable compared to any other solution. Special damper blades made of aluminum are used with special shallow shaft and hinges allowing the be heated from inside. Adjustable delta T thermostate, and connector box is provided and mounted on the unit. The energy consumption/ power is calculated (blade length*row count*30 watts) and showed on the control box. The system is capable of working down to -48 degrees.
- **Damper Motor**
- **Louvre** : Ahu inlet / outlet louvres
- **SandTrap Louvre** : Units located in places which takes air from an environment with huge dirt/ dust leads the filtering system not to function properly. In order to protect the filters from dust, sandtraps are used at fresh air inlets providing a dust free air through the unit.



○ Filter Module

Filter module is used to remove unwanted particles and odors from the conditioned space. Filter frames are produced from 1mm galvanized sheet in 610x610 mm and 610x305 mm sizes sealed with gaskets and spring type retainers. Frames are sealed tightly before being mounted into the module.

Depending on the application, single or multi stage removable filters with different efficiencies can be utilized. For panel-bag combination applications, mounting both filter onto the same frame saves space and simplifies maintenance. The face velocity at the cooling coil and the filter determines the air handling unit model to be selected.

Filter elements are mounted leak-proof onto the standard frames containing gaskets. With the help of the tightening retainer used on the frames, each filter cassette can be removed or assembled independently. Filter frames are positioned perpendicular to the airflow direction in the unit. Special filters like HEPA, carbon, metallic etc. can be used upon request.

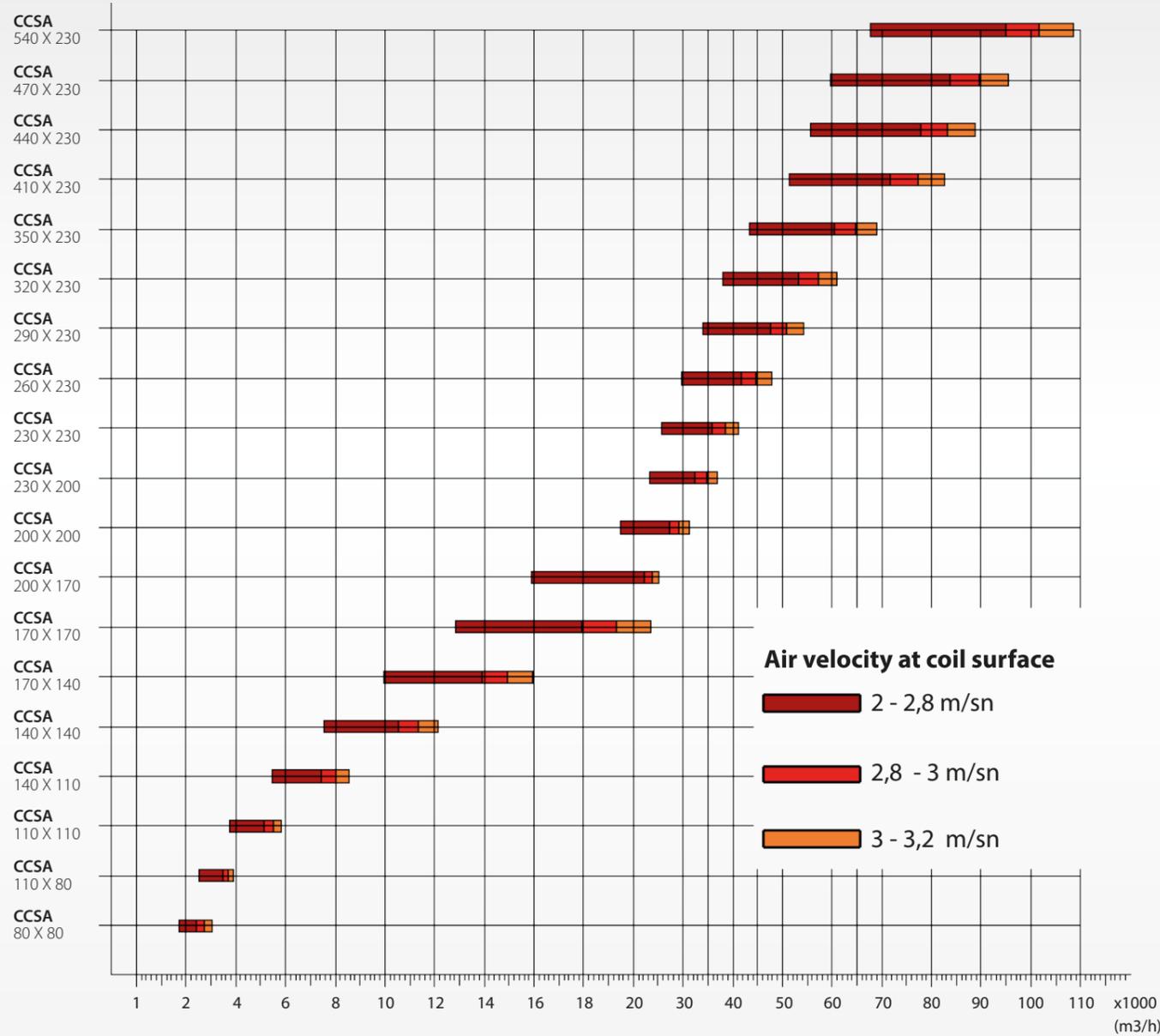
Differential pressure gauges to read to pressure drop across the filter are optional on these module. Because each filter element is mounted tightly onto the frame, leakage and noise due to vibration in sliding cassette type filters are prevented.

OPTIONS for FILTER MODULE :

- **Differential Pressure Switch** : Switch that gives and/or cuts signal when the pressure set is exceeded
- **Differential Pressure Gauge** : Gauge that shows the initial pressure difference between two set points



QUICK SELECTIONS



The purpose of this catalogue is to help consulting engineers in the preliminary selection of the Trane CCSA air handling units. Your regional Trane office will assist to provide a computerized selection to confirm or complete your preliminary selection.

Where something more special is required, we have full technical support in our regional sales offices and at our factory where non-standard layouts and configurations can be designed to individual requirements.

Trane reserves the right to change dimensions and flow rate values without prior notice in respect to product development & tailor made - non standart units.



CONTROL MODULE (MMC & DDC PANEL)

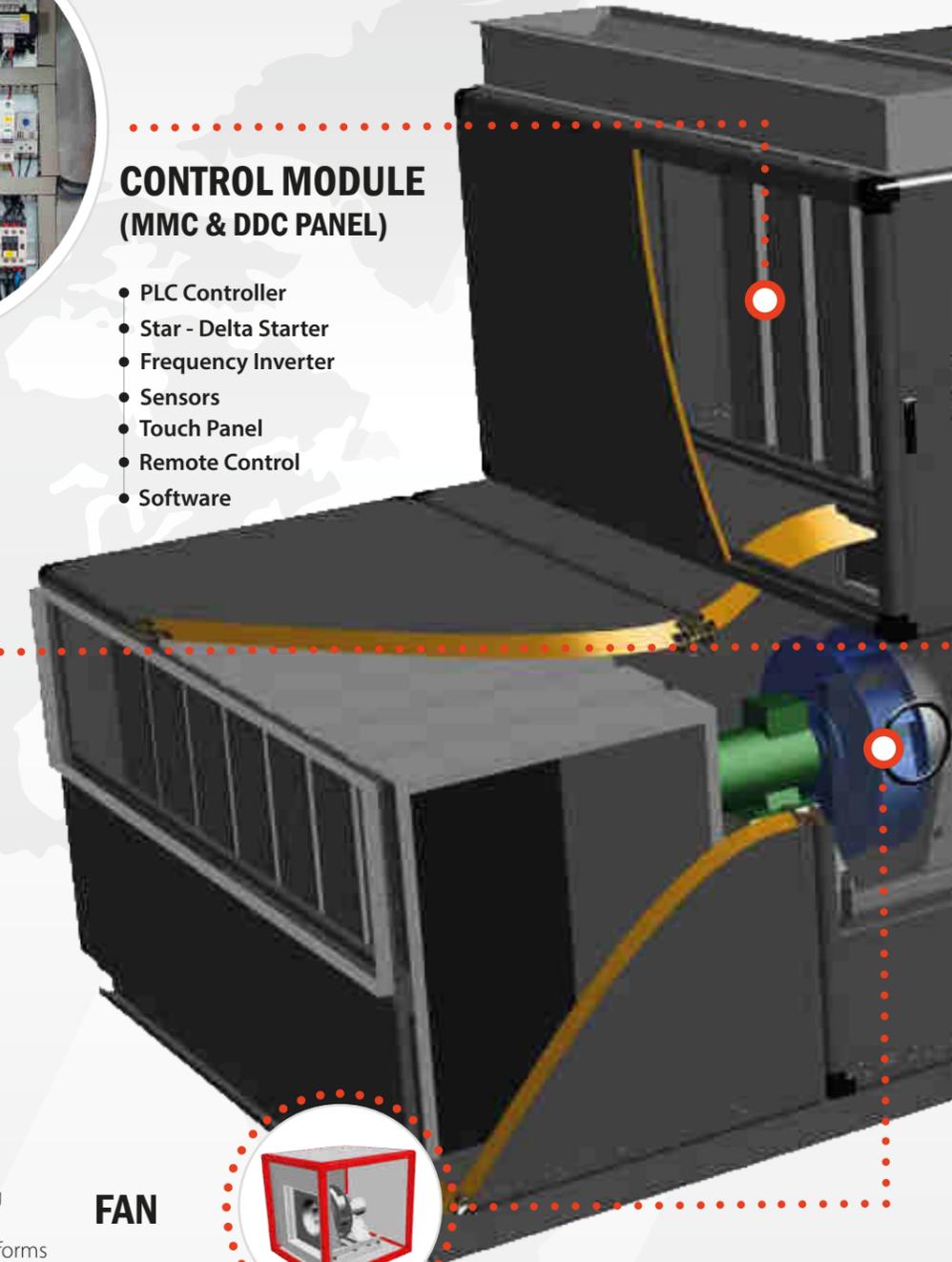
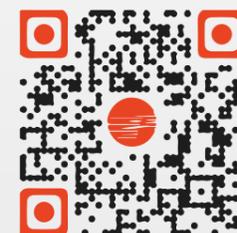
- PLC Controller
- Star - Delta Starter
- Frequency Inverter
- Sensors
- Touch Panel
- Remote Control
- Software



UNIT LABELING

- Technical Data
- Dynamic QR code for fast maintenance

New generation online servicing tool. Scan the QR code for direct contact, IOM manuals & service forms



FAN

- Plug Fan
 - EC Fan
 - Standard Plug Fan
- Double Inlet Centrifugal
 - Backward Curved Blade
 - Forward Curved Blade



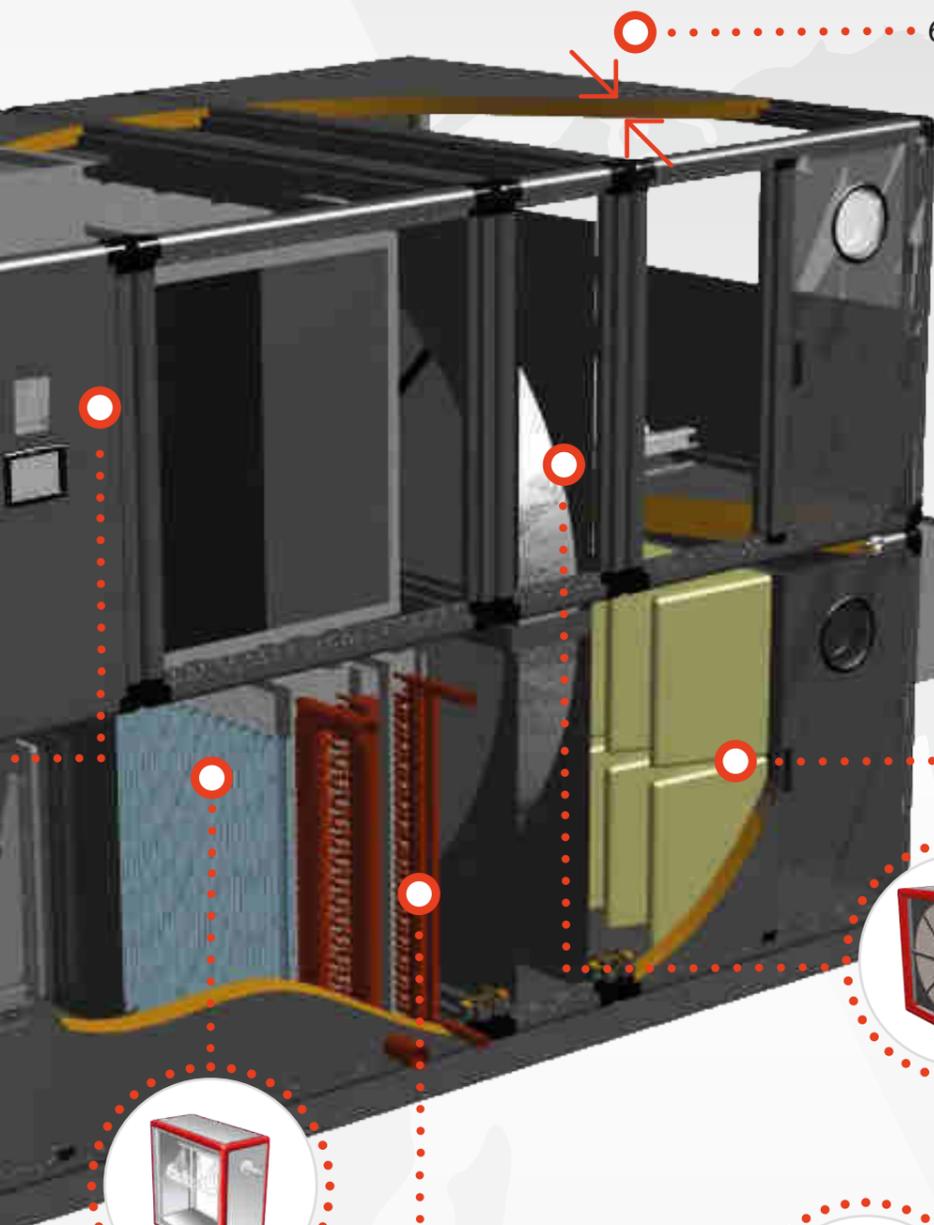
MOTOR

- IE 2
- IE 3
- IE 4
- EC

CCSA
Air Handling Unit
QUICK SELECTION - SALES LEAFLET



PACKAGED AIR HANDLING UNITS



60 mm Panel Thickness

FILTER

- Panel
 - G2 - Metal
 - G3 - Panel (Standart / Washable)
 - G4 - Panel
- Rigidbag
 - M5
 - M6
 - F7
 - F8
 - F9
- Activated Carbon
- HEPA (Absolute)
- Compact
- Chemical
- Electrostatic
- Ultraviolet



HEAT RECOVERY

- Rotary
 - Condensation Rotor
 - Enthalpy Rotor
 - Sorption Rotor
- Plate
- Run Around Coil
- Heat Pipe



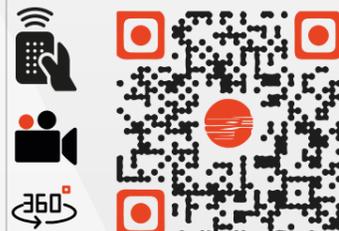
HUMIDIFIER

- Water
 - Fog System
 - Standard Watery
- Steam
 - Water to Steam
 - Steam to Steam
- Pad Type

COILS

- Heating
 - Hydronic
 - Gas Charged / Condensing
 - Steam
 - Electrical
- Cooling
 - Hydronic
 - Gas Charged / Dx - Direct Expansion

Scan the QR code for remote controlled & live AHU presentation



CCSA AIR HANDLING UNIT



Packaged air handling unit solutions provide a wide range of advantages to the end user. The compact TRANE packaged air handling units are all-in-one plug and play solutions that provides easy installation, less space while providing high performance & high energy efficiency.

Automated HVAC System advantages

TRANE control equipments and Ultimate TRANE PPS (Pre-Packaged Solutions) automation softwares are integrated and used create efficient automation environment. The unit interprets the data transmitted from the sensors and adjust the conditions of the air until satisfying the necessary needs. Optional frequency control provides a wide operating range with high efficiency.

TRANE Tracer™ Controls

open, mobile, flexible, and scalable

Variable Frequency Drives



- Tracer™ UC 600 Programmable Controller
- Tracer™ XM70 Expansion Module

Tracer™ TD-7 Touch Screen

• Tracer® SC System Controller



High Performance, High Energy Efficiency and Consistency

TRANE Engineering provides highly energy efficient equipments to maintain the optimum performance considering the needs in the corresponding environment.



CCSA

Air Handling Unit

QUICK SELECTION - SALES LEAFLET

MODULE LENGTH L (mm)



MODEL	Filter Arrangement □ 610 x 305 □ 610 x 610	External Dimensions		Flow rate based on surface velocity of heat exchangers m³/h			Coil Cross Section (mm²)	AHU Internal Free Area (mm²)	Supply Module with one damper M1	Supply Module with two dampers M2	Mixing module with three dampers M3	Filter PB	Heating Coil HU	Electric Heater HE	Cooling Coil CU	Plug Fan PB
		A	H	V=2/s	V=2,5m/s	V=3,2m/s										
		(mm)	(mm)	[m³/h]	[m³/h]	[m³/h]										
CCSA 080x080	□	760	760	1.650	2.000	2.650	0,22	0,41	660	660	1.360	560-760	360	460	860	/
CCSA 110x080	□	1.060	760	2500	3060	3.916	0,34	0,6	660	660	1.360	560-760		460	860	/
CCSA 110x110	□	1.060	1.060	3.700	4.590	5.875	0,51	0,89	660	660	1.360	560-760	360	460	860	1.060
CCSA 140x110	□	1.360	1.060	5.350	6.660	8.524	0,74	1,19	660	660	1.360	560-760	360	460	860	1.060
CCSA 140x140	□	1.360	1.360	7.600	9.450	12.096	1,05	1,59	660	660	1.360	560-760	360	460	860	1.260
CCSA 170x140	□	1.660	1.360	10.000	12.420	15.897	1,38	1,95	660	660	1.360	560-760	360	460	860	1.360
CCSA 170x170	□	1.660	1.660	12.900	16.020	20.505	1,78	2,38	760	760	1.630	560-760	360	460	860	1.460
CCSA 200x170	□	1.960	1.660	15.900	19.800	25.344	2,2	2,88	760	760	1.630	560-760	360	460	860	1.560
CCSA 200x200	□	1.960	1.960	19.500	24.300	31.104	2,7	3,48	960	960	1.960	560-760	360	460	860	1.760
CCSA 230x200	□	2.260	1.960	23.200	28.890	36.979	3,21	4,04	960	960	1.960	560-760	360	460	860	1.760
CCSA 230x230	□	2.260	2.260	25.750	32.130	41.126	3,57	4,69	1.060	1.060	2.260	560-760	360	460	860	2.260
CCSA 260x230	□	2.560	2.260	30.000	37.260	47.692	4,14	5,35	1.060	1.060	2.260	560-760	360	460	860	2.260
CCSA 290x230	□	2.860	2.260	34.000	42.390	54.259	4,72	6,03	1.060	1.060	2.260	560-760	360	460	860	2.260
CCSA 320x230	□	3.160	2.260	38.000	47.070	60.249	5,29	6,68	1.060	1.060	2.260	560-760	360	460	860	2.260
CCSA 350x230	□	3.560	2.260	43.200	54.000	69.120	6	7,36	1.060	1.060	2.260	560-760	360	460	860	1.260
CCSA 410x230	□	4.160	2.260	51.500	64.260	82.252	7,14	8,68	1.060	1.060	2.260	560-760	360	460	860	1.260
CCSA 440x230	□	4.460	2.260	55.500	69.390	88.819	7,72	9,34	1.060	1.060	2.260	560-760	360	460	860	1.260
CCSA 470x230	□	4.760	2.260	60.000	74.520	95.385	8,29	10,01	1.060	1.060	2.260	560-760	360	460	860	1.260
CCSA 540x230	□	5.260	2.260	68.000	84.780	108.518	9,43	11,33	1.060	1.060	2.260	560-760	360	460	860	1.260

Trane reserves the right to change dimensions and flow rate values without prior notice, in respect to product development.

Double Inlet Fan	Steam Humidifier	High Pressured Humidifier	Plate Heat Recovery	Rotary Heat Recovery	Heat Recovery with Two Heat Exchangers	Sound Attenuator Module	● %100 Fresh AHU ● Mixed AHU		Mixed AHU with Extract Fan ●		● %100 Fresh AHU with HRW ● Mixed AHU with HRW		● %100 Fresh AHU with Plate HR ● Mixed AHU with Plate HR	
PB	HS		HE		ET	SA	AHU Length	Motor Power (avg)	AHU Length	Motor Power (avg)	AHU Length	Motor Power (avg)	AHU Length	Motor Power (avg)
1.060	1.160	2.360	860	660	860	960-1.860	3.460	1,10	5.560	1,10	4.860	2,20	4.860	2,20
1.060	1.160	2.360	860	660	860	960-1.860	3.460	1,50	5.560	1,50	4.860	3,00	4.860	3,00
1.160	1.160	2.360	960	660	860	960-1.860	3.560	2,20	5.760	2,20	4.860	4,00	4.860	4,00
1.260	1.160	2.360	960	660	860	960-1.860	3.660	3,00	5.960	3,00	4.860	7,50	4.860	7,50
1.460	1.160	2.360	1.260	660	860	960-1.860	3.860	5,50	6.160	5,50	4.860	11,00	4.860	11,00
1.560	1.160	2.360	1.360	660	860	960-1.860	3.960	5,50	6.160	5,50	4.860	11,00	4.860	11,00
1.660	1.160	2.360	1.660	660	860	960-1.860	4.060	7,50	6.360	7,50	5.060	18,50	5.060	18,50
1.760	1.160	2.360	1.660	660	860	960-1.860	4.160	11,00	6.360	11,00	5.060	22,00	5.060	22,00
2.060	1.160	2.360	1.960	660	860	960-1.860	4.460	11,00	6.660	11,00	5.160	22,00	5.160	22,00
2.060	1.160	2.360	1.960	660	860	960-1.860	4.460	15,00	6.660	15,00	5.160	30,00	5.160	30,00
2.060	1.160	2.360	-	660	860	960-1.860	4.460	18,50	6.660	18,50	5.260	37,00	5.260	37,00
2.260	1.160	2.360	-	660	860	960-1.860	4.660	18,50	6.660	18,50	5.260	37,00	5.260	37,00
2.560	1.160	2.360	-	660	860	960-1.860	4.960	22,00	6.960	22,00	5.260	45,00	5.260	45,00
1.860	1.160	2.360	-	660	860	960-1.860	4.260	22,00	6.360	22,00	5.260	55,00	5.260	55,00
2.060	1.160	2.360	-	660	860	960-1.860	4.460	30,00	6.660	30,00	5.260	55,00	5.260	55,00
2.060	1.160	2.360	-	-	860	960-1.860	4.460	37,00	6.660	37,00	5.260	55,00	5.260	55,00
2.260	1.160	2.360	-	-	860	960-1.860	4.660	37,00	6.660	37,00	5.260	75,00	5.260	75,00
2.260	1.160	2.360	-	-	860	960-1.860	4.660	37,00	6.660	37,00	5.260	75,00	5.260	75,00
2.560	1.160	2.360	-	-	860	940-1.840	4.960	45,00	6.960	45,00	5.260	90,00	5.260	90,00



PACKAGED HYGIENIC AIR HANDLING UNITS

5CKL - HAHU

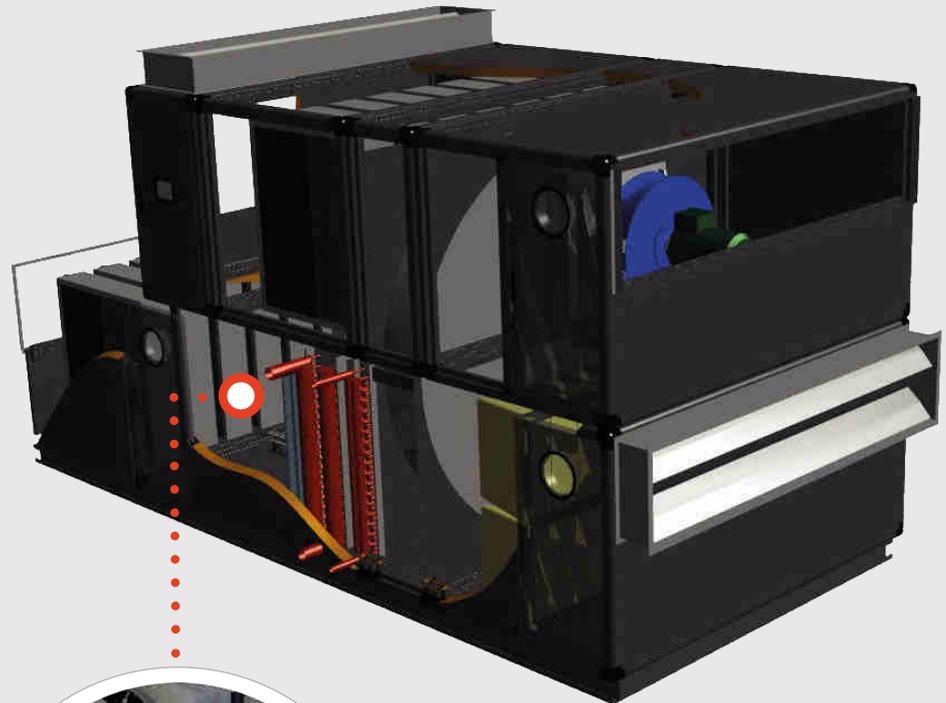


5CKL - HAHAU AIR HANDLING UNIT

PACKAGED HYGIENIC AIR HANDLING UNITS WITH MOUNTED CONTROLS

5CKL - HAHU Hygienic air handling units are designed to meet the clean room specifications of hospitals, surgery-operation rooms and other various branches dealing with sterile process like food, medicine and chemical facilities. In order to maintain the necessary sterile conditions, **TRANE** uses special and smooth panel-frame design to avoid in-unit contamination and stainless steel equipments to avoid corrosion by time providing a long-life healthy and hygienic grade air.

5CKL - HAHU combines **TRANE** hygienic air handling units with **TRANE** engineering to provide a packaged solution with high efficiency.



Optional Refrigerant System Integration

Refrigerant System integrated air handling units are a unique and trend design which solves both evaporation and condensation all in one unit. Efficient compressors Works together with energy recovery systems in cooperation leads the system to operate under high COP's. TRANE Refrigerant integrated air handling units provide safe and reserved system while consuming less energy to hold the regime and create reliability by Twin-Triplet-Quad Compressors.



PACKAGED DEHUMIDIFYING AIR HANDLING UNITS



5CKL - DAHU

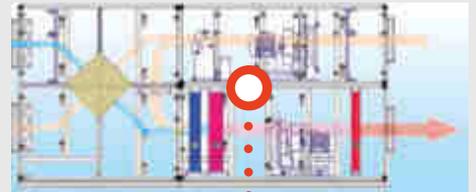


5CKL - DAHU AIR HANDLING UNIT

Due to high amount of evaporation at indoor swimming pools, dehumidification of the ambient air is a necessary need. Standard air handling units remain inadequate at this level. **TRANE** engineers upgraded standard air handling units with the special requirements for indoor swimming pools and spa areas. For **TRANE** comfort and health of the bathers have first priority considering the HVAC here. Therefore it is essential to remove excessive amount of humidity from ambient air.

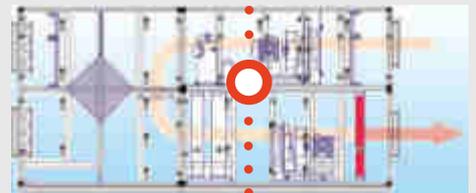
STAND-BY OPERATION MODE

Compressors wait at stand-by and unit at rest. Supply and Exhaust fans work under minimum duty providing an optimum clean air condition (makes a certain amount of fresh air mixture) inside the pool/spa area while closed for service.



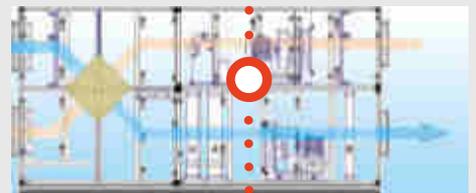
DEHUMIDIFICATION MODE

Unit Works with full duty related with automation scenario and the PLC software. Pool/SPA ambient air is recirculated and dehumidified by the on-duty refrigerant system. Reserved compressors shuts-off and waits at stand-by when the requested regime is provided. Necessary fresh air is blown according to the initial scenario.



FREE COOLING MODE

In other words mid-season climate change mode, corresponds to %100 Fresh air supply and %100 Exhaust air extracted from high humidity air (Mixing Damper fully closed no Mixing chamber)



Refrigerant System Integration

Refrigerant System integrated air handling units are a unique and trend design which solves both evaporation and condensation all in one unit. Efficient compressors Works together with energy recovery systems in cooperation leads the system to operate under high COP's. TRANE Refrigerant integrated air handling units provide safe and reserved system while consuming less energy to hold the regime and create reliability by Twin-Triplet-Quad Compressors.



PACKAGED DATA CENTRE AIR HANDLING UNITS

5CKL - DCAHU

5CKL - DAHU AIR HANDLING UNIT



Data centre hvac systems hold a significant role on a facility's capital expenditure and use a substantial amount of energy. ASHRAE (American Society of Heating, Refrigerating, and Air-conditioning Engineers) publishes specific guidelines for temperature and humidity control within data centres.

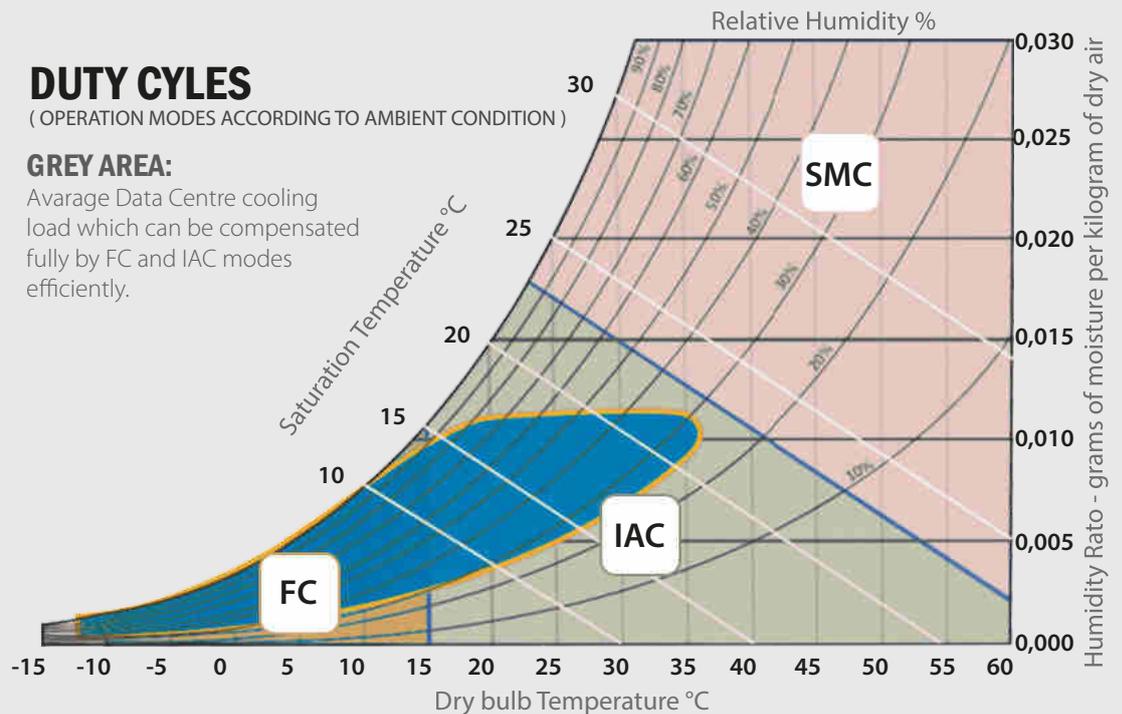
TRANE engineers created an upgraded packaged air handling unit solution to provide and maintain a sensitive, consistent and reliable ambient air condition inside data centres.

DUTY CYCLES

(OPERATION MODES ACCORDING TO AMBIENT CONDITION)

GREY AREA:

Average Data Centre cooling load which can be compensated fully by FC and IAC modes efficiently.



FC : FREE COOLING

Free cooling mode works when the outdoor air temperature is lower than the indoor air temperature. The external air exchanges heat by heat recovery system, thus removing heat from the data centre. This mode requires no additional process

IAC : INDIRECT EVAPORATIVE COOLING

Indirect evaporative cooling mode uses adiabatic humidifiers before heat recovery system to pre-cool the external air. Loading air flowing inside an ahu with water, letting it evaporate, increases the humidity inside the air and lowers down the temperature which provides a higher heat recovery capacity and a higher efficiency. Indirect evaporative cooling mode is basically an upgraded mode of free cooling which gives a high cooling capacity with very low energy consumption.

SMC : STANDART MECHANICAL COOLING

Standart mechanical cooling mode is used at conditions which SC or IAC remains insufficient. Refrigerant or chilled water systems can be used as optional.



OPTIONS



CCSA AIR HANDLING UNIT

Color Option :

Outer surface of TRANE CCSA air handling units are standard RAL 7016. Different colored units can be produced upon request to satisfy architectural needs.

OPTIONS for GENERAL MODULE

Interior Lighting (Lightening With Switch) : Interior Lightening

Observation Window : Double Skinned Window for Observation Purpose

Door Sensor : Safety switch for doors. Cuts the signal unless the door is closed

Roof (Sheet Metal / Canvas) : Waterproof solutions for external units

Factory Prewired Unit : Prewiring option decreases the amount of electrical work at site in a way that all in-unit cabling are excluded from scope of electrical contractor. Jack type connections and hidden cabling avoids any complications during assembly or future use.



Unit Mounting at Site Option :

Manufacturing the parts and sending them to site. Ready parts and equipments are mounted at site by our team. This option lets the customer put units in mechanical rooms which are enclosed and impossible to carry from within the openings/doors. Also Mounting the units at site creates a significant advantage regarding the transportation costs.





Trane has a policy of continuous product and product data improvement and reserves the right to change design and specifications without notice.
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Trane® is a brand of Ingersoll Rand®. Ingersoll Rand (NYSE:IR) advances the quality of life by creating comfortable, sustainable and efficient environments. Our people and our family of brands—including Ingersoll Rand®, Trane®, Thermo King® and Club Car® — work together to enhance the quality and comfort of air in homes and buildings; transport and protect food and perishables; and increase industrial productivity and efficiency. We are a global business committed to a world of sustainable progress and enduring results.



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